

## **DETAILED ACTION**

Applicant's remarks and amendments, filed on December 02, 2009, have been carefully considered. Claim 1 has been added by applicant. Claims 1, 3-14, and 26 are still pending in this application.

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 1, 3-10, 13-14, and 26 rejected under 35 U.S.C. 103(a) as being unpatentable over Raehse et al. (USP No. 5,382,377) in view of Morrison (USP No. 6,770,609).

4. Regarding claim 1, Raehse teaches a process for producing a cleaning composition (**detergent**) tablets via extrusion. (**See abstract**).

- a. Comprising the steps
  - i. Forming of a premix which contains a cleaning composition particulate (**homogeneous detergent premix**) and a lubricant. (**See abstract and column 2 lines 58-67 disclosing that the premix is solid particalized detergents with additional liquid ingredients that may be a plasticizer and/or a lubricant.**)
  - ii. Adding the premix into an extruder. (**See column 2 lines 45-47, disclosing the addition of the premix into an extruder. Obviously, all extruders must have at least one feed port for the premix of material to be extruded.**)
  - iii. Adding a binder (plasticizer) --Raehse teaches the additional step of adding a plasticizer/lubricant (**which acts as a binder material**) to a detergent composition (**pre-mix**). Raehse goes on to teach that the plasticizer/lubricant to be added; can be solid at room temperature and mixed with the premix while in the form of a liquid. (**See column 2 line 58 to column 3 line 46**)
    - (1) See specifically column 3 lines 1-10 disclosing that the plasticizers and/or lubricants can be paste-like (**Solid**) at room temperature.

(2) See specifically column 3 lines 1-10 and 10-23 disclosing that the plasticizers/lubricants (**binder**) can be liquid phase.

(3) Raehse teaches that surfactants and/or polymers can be used as plasticizers/lubricants. (See column 3 lines 24-35).

Furthermore, Raehse teaches that the surfactant components act as binder-like surface layers that are responsible for the cohesion of the granules. (See column 3 lines 36-46).

iv. Extruding the premix once in the extruder. (See column 2 lines 45-

**47 describing an extrusion process with a perforated die for extruding the detergent strands.)**

v. And finally cutting the detergent strands into tablets. (See column 2 lines 55-57).

b. With respect to claim 1, Raehse teaches wherein a proportion of the cleaning or water softening composition (premix) remains in a solid form even after binder/plasticizer/lubricant addition when entered into extrusion process.

(See column 4 lines 60-64). Only a small proportion of binder/plasticizer/lubricant is added in order to join the granules of premix to one another. (See column 3 lines 24-46). In fact after extrusion, the end product is compacted granules. (See column 16 lines 56-63). The granules (premix) are not dissolved or part of a solution in an end product. Plasticized material is referring to the binder/plasticizer/lubricant which is holding the premix material together allowing for fluid manipulation of the mixture. Furthermore, the extrusion

temperatures are between 40-60C. (**See column 5 lines 30-36**). This is not high enough to bring the premix to a molten state. Finally, the objective of making a detergent tablet is to allow for the dissolving of the tablet in an effort to release the detergent in a process. As typically only 12% by weight of binder/plasticizer/lubricant is added to the process, inherently the wt% of pre-mix in the plasticized mixture will be at least 20%. (**See column 3 lines 24-35**). Also as the extrusion pressure in both Raehse and this instant application is processed at nearly the same pressure and temperature, inherently if the premix will not become liquid in applicant's process the same will happen in the process of Raehse. (**See example set 3 on pages 40-41 of applicant's specification and column 5 lines 30-55 in Raehse teaching similar extrusion parameters**).

vi. In the alternative, if Raehse is considered not to teach over 20% by weight of solid pre-mix in the plasticized mixture (during extrusion), this would have been obvious to one having the ordinary skill in the art trying to make a dissolvable detergent tablet. While the specific range of 20% by weight solid particulate is not specifically claimed. Only an amount of plasticizers/lubricants necessary to make the pre-mix flowable is necessary in order to ensure that a high solid fraction extrudant emerges. Therefore, it would have been obvious to one having the ordinary skill in the art at the time of the invention to adjust the amount of plasticizers/lubricants that are added, since it has been held that discovering an optimum value of a result effective variable involves only

routine skill in the art. *In re Boesch*, 617 F.2d. 272, 205 USPQ 215 (CCPA 1980). In this case, depending on the needs of the final product (dissolvability of the detergent tablet) the amount of binders may be adjusted in order to make a marketable product.

(4) The plasticizers/lubricants (aka. binders) used in Raehse are used as auxiliary aids or processing aids during the extrusion process. The plasticizer being added allows for better extrusion as extruding solid particulate is a known problem in the field of extrusion. This plasticizing procedure is done strictly to ensure that the pre-mix is flowable (paste-like). (See column 3 lines 1-10). Moreover, even after the addition of the plasticizers/lubricants (aka. binders) the pre-mix maintains its free-flowing powder form during introduction in the extrusion or mixing system. (See column 4 lines 60-64).

c. With respect to claim 1, Raehse does not teach wherein a citrate salt is used as part of the detergent composition with a lower limit particle size of 150 microns.

d. However, Morrison teaches the use of a light reflecting particle in a detergent composition. (See abstract). This light reflecting particle is a metal salt, for example, a citrate salt. (See claims 1-3 and column 7 lines 41-46). Morrison teaches additionally that the light reflecting agent (citrate salt) can be added (mixed) with other detergent additives (PEG- Binder) via an extrusion

method. (See column 6 lines 60-67). Moreover, Morrison teaches that the mean particle size of the light reflecting component can be 0.05 microns to 1000 microns. (See column 5 lines 51-59).

e. It would have been obvious to one having the ordinary skill in the art to combine Raehse and Morrison for the benefit of adding an aesthetic appearance in a detergent composition. (See Morrison column 1 lines 12-22). Morrison goes on to teach that additional components like binders, softening components, light reflecting components, and other additives are added to detergent compositions. (See column 5 lines 7-13). As applicant has stated that the citrate salt can act as a water softening composition. (See page 23 line 5-15 of applicant's specification). Thus, as Morrison specifically discloses the addition of softening components and light reflecting components to their detergent composition, it would have been obvious for one having the ordinary skill in the art to add a citrate salt to the detergent.

2. Regarding claims 3-5, Raehse teaches that the extrusion pressure is between 25 to 200 bars (2.5 to 20 MPa).

3. Regarding claim 6, Raehse teaches the use of a twin-screw extruder. (See column 5 lines 30-35).

f. With respect to claim 6, Raehse does not expressly teach wherein the twin screw extruder has screw overlap (essentially the screws are intermeshing) and that the extruder is configured to advance the extrudant.

vii. However, it is well known in the art that a twin screw extruder can be used to meter or mix an extrudant material. It is well known in the art of twin screw extruding that the screws can be intermeshing or non-intermeshing. An intermeshing screw has screw overlap and this overlap can be modified in order to minimize the shearing action that takes place between the rotating screws. Because of this, claim 6 would have been obvious to one having the ordinary skill in the art because a person of ordinary skill has good reason to pursue known options within his or her technical grasp. In this case, it would have been obvious to try an intermeshing screw with minimal screw overlap because using a twin screw for metering rather than shearing is a common endeavor solved by altering the intermeshing screws.

4. Regarding claims 7 and 8, Raehse teaches that the strand is subjected to a post-extrusion enhancement process such as post-extrusion cooling. (See column 5 lines 60-67 disclosing that the strands are cooled post extrusion and column 2 line 57 disclosing that the strands can be cut post extrusion.)

5. Regarding claim 9, Raehse teaches wherein the material mixed within the twin screw extruder at a temperature of 60 to 70C and as low as 40C. (See column 5 lines 8-21)

6. Regarding claim 10, Raehse discloses wherein the lubricant is fluid at room temperature. (See column 3 lines 1-10).

g. However, Raehse while does not explicitly disclose wherein the lubricant is liquid, this would have been obvious. When describing a material as fluid it is likely that the material will be gas phase fluid or liquid phase fluid. However, it would be unlikely that a gaseous phase lubricant would be used in an extruder because the lubricant is supposed to intermingle with the solid particulate and facilitate a free flowing premix. Therefore, it would have been obvious to use a liquid lubricant.

7. Regarding claim 13, Raehse discloses wherein the surfactant that acts like a binder-like substance is typically a paste-like or gel-like substance. (See column 3 lines 29-46)

h. With respect to claim 13, Rae does not expressly state that the binder is molten under extrusion conditions.

viii. However, it would have been obvious to ensure that the binder was molten during extrusion because it is well known in the art that there is severe wear and tear on an extruder that attempts to extrude any material that is not in a molten state.

8. Regarding claim 14, Raehse does not explicitly teach wherein the binder is polyethylene glycol.

i. However, Morrison teaches wherein the binder is polyethylene glycol. (See column 5 lines 7-14).

j. It is well known in the art of extrusion to use PEG as a binder. Therefore, it would have been obvious to use PEG as a binder to facilitate cohesion of the premix particulates.

9. Regarding claim 26, Raehse teaches wherein the strand or pellets can be cooled after extrusion or separated into tablets. (See column 5 lines 40-42 and 62-67).

10. Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Raehse et al. (USP No. 5,382,377) in view of Morrison (USP No. 6,770,609) in view of Hoffmann et al. (US Pre-Grant Publication 2002/0015730 A1).

11. Regarding claims 11 and 12, Raehse/Morrison does not explicitly teach: (1) wherein the lubricant comprises a sucrose ester or a sorbitan ester and (2) wherein the lubricant comprises a sucrose oleate.

k. However, Hoffmann teaches: (1) wherein the lubricant comprises a sucrose ester. (See paragraph [0044] disclosing that sucrose esters can act as a lubricant and are suitable for granulating) and (2) wherein the lubricant comprises a sucrose oleate. (See paragraph [0057] disclosing the use of sucrose oleates with sucrose esters).

l. Raehse and Hoffmann are from the same field of endeavor which is making tablets by adding a lubricant/binder to facilitate tablet formation. At the time of the invention, it would have been obvious to one having the ordinary skill

in the art, having the teachings of Raehse and Hoffmann before him or her, to modify the teachings of Raehse to include the teachings of Hoffmann for the benefit of utilizing a lubricant as a mold release (See paragraph [0035]). It is submitted that it is common knowledge to use lubricants such as sucrose esters in extrusion processes to control frictional properties of the plasticized materials. Furthermore, sucrose ester is a nonionic surfactant (see paragraph [0045]) which is a well known suitable lubricant in extrusion operations. Moreover, Raehse identifies that nonionic surfactants can be used as lubricants. (See column 3 lines 1-10 in Raehse).

#### ***Response to Arguments***

1. Applicant's arguments filed May 01, 2009 have been fully considered but they are not persuasive.
2. **Applicant Argument #1:** "That because Raehse et al. teaches that the extruded composition as being plasticized, the whole extruded concentration must be in a liquid or molten state."
3. **Examiner Response to Argument #1:**
  - a. Applicant has put forth the position that, "when an extruded composition is described as being plasticized, it must be assumed that this entire composition is converted into a liquid form."—see page 4 (paragraph 2) of applicant's remarks dated December 02, 2009.

- i. This statement is false. Adding a plasticizer in order to plasticize a solid composition is well known in the art. The addition of plasticizer is solely to make the solid composition flowable, thus easier to extrude. A plasticizer is defined as a substance which when added to another material makes that material softer and more flexible. (See Cadogan et al., Kirk-Othmer Encyclopedia of Chemical Technology, "Plasticizers" (2000) page 1).
- ii. In this case, plasticizer is added to the detergent (solid material) in order to make the solid pliable. The solid detergent is still present in the extruded mixture as the detergent or premix is not dissolved into the plasticizer in a molten state.
- iii. Also as the extrusion pressure in both Raehse and this instant application is processed at nearly the same pressure and temperature, inherently if the premix will not become liquid in applicant's process the same will happen in the process of Raehse. (See example set 3 on pages 40-41 of applicant's specification and column 5 lines 30-55 in Raehse teaching similar extrusion parameters).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to AMJAD ABRAHAM whose telephone number is

(571)270-7058. The examiner can normally be reached on Monday through Friday 8:00 AM to 5:00 PM Eastern Time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Phillip Tucker can be reached on (571) 272-1095. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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AAA

/Philip C Tucker/  
Supervisory Patent Examiner, Art Unit 1791